

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
3 March 2005 (03.03.2005)

PCT

(10) International Publication Number
WO 2005/019647 A1

(51) International Patent Classification⁷: **F04B 43/08**

(21) International Application Number:
PCT/JP2004/011954

(22) International Filing Date: 13 August 2004 (13.08.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2003-300038 25 August 2003 (25.08.2003) JP

(71) Applicant (for all designated States except US): **SEIKO EPSON CORPORATION [JP/JP]**; 4-1, Nishishinjuku 2-chome, Shinjuku-ku, Tokyo 163-0811 (JP).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **AKAHORI, Yutaka [JP/JP]**; c/o Seiko Epson Corporation, 3-5, Owa 3-Chome, Suwa-Shi, Nagano 392-8502 (JP).

(74) Agents: **ASAHI, Kazuo et al.**; Nishi-Shinbashi Noa Bldg., 4th Floor, 18-9, Nishi-Shinbashi 1-chome, Minato-ku, Tokyo 105-0003 (JP).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

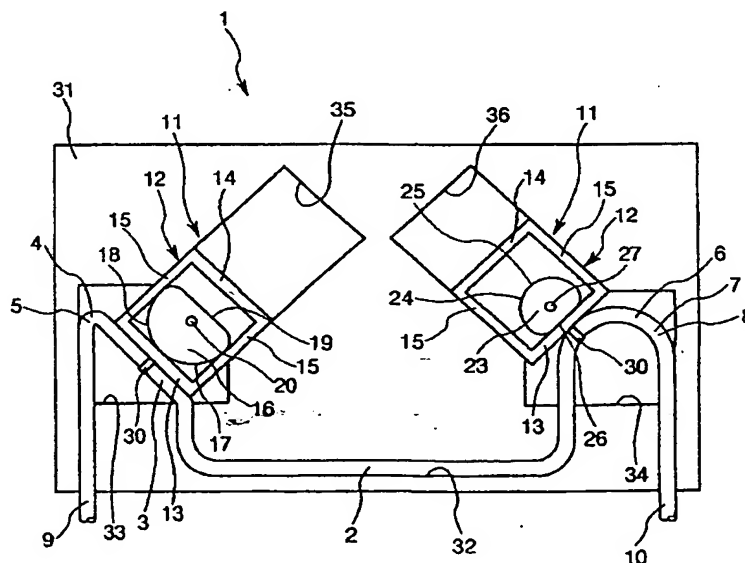
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: **A TUBE PUMMP**



(57) Abstract: In a tube pump 1, two curved portions 3, 6 are respectively provided at both ends of a tube 2, and two opening/closing mechanisms 11 are provided at the portions corresponding to opening/closing portions 4, 7. The opening/closing mechanisms 11 includes cams 16, 23 protective frames 12 for converting the rotational motions into linear motions, and an actuator for rotatively driving the cams 16, 23. When the cams 16, 23 are rotatively driven with the operation of the actuator, the curved portions 3, 6 are pushed via the protective frames 12, and the flow path is closed and opened by folding the opening/closing portions 4, 7 and releasing the pushing state of the opening/closing portions 4, 7 to be restore to the original shape. By carrying out fold and unfold of the tube 2, it is possible to effectively transfer the fluid at a small amount of energy.

WO 2005/019647 A1